Problems in Family Practice

Dermatoses of the Groin

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Apposition of the skin surfaces in intertriginous areas may cause occlusion, intertrigo, interference with aeration and cooling, miliaria rubra (prickly heat), and folliculitis. These changes may invite bacterial infection, and warmth and moisture make of the skin a good culture medium for tinea and candida. Both allergic and primary irritant contact dermatitis are partial to areas where the integrity of the epidermis is compromised. Irritants may irritate and allergens may sensitize in the groin but not on glabrous skin. Psoriasis, seborrheic dermatitis, and other papulosquamous diseases present a different appearance in intertriginous areas. The scale so characteristic on glabrous skin is macerated and washed away, often uncovering a red, smooth, glistening shiny base. One of the puzzles of parasitology is the localization of pediculosis pubis to the pubic area and pediculosis capitis to the scalp. Striae secondary to topical application of potent corticosteroids appear in the groin, the upper inner thighs, the axilla, and even on glabrous skin. Thinness of the epidermis and occlusion facilitates absorption in intertriginous areas. Management of skin infections of the groin requires an understanding of the special problems associated with intertriginous skin.

Skin eruptions of the groin are a common clinical problem in family practice. The dermatologist also sees many of these patients; some come directly, some are referred by family physicians, and others defect to the dermatologist without their physician's knowledge. The generalist probably diagnoses correctly and treats successfully the majority of such patients; however, a good number come to the dermatologist after unsuccessful treatment by the family physician. It is usually error in diagnosis which causes therapeutic failure, as the following case report indicates.

A 44-year-old male patient was referred to me complaining of itching of one year's duration on the upper inner thighs and in the posterior gluteal crease. The patient had been diagnosed by his family physician as having neurodermatitis and 1 percent hydrocortisone cream was prescribed. When there was no improvement, fluocinonide

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Table 1. Common Dermatoses of the Groin

Diaper dermatitis
Tinea cruris
Candidiasis (Moniliasis)
Lichen simplex chronicus
Contact dermatitis
Intertrigo
Psoriasis
Seborrheic dermatitis
Pediculosis pubis
Striae

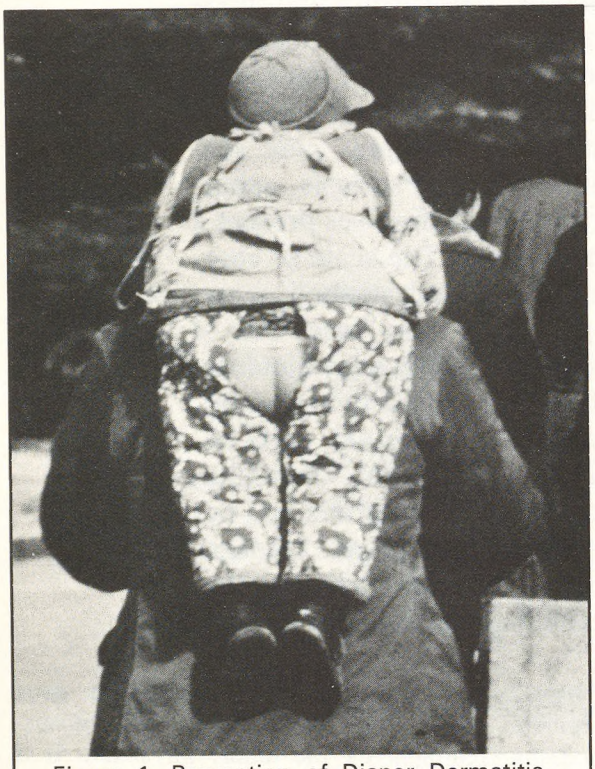

Figure 1. Prevention of Diaper Dermatitis—Peoples Republic of China

(Lidex) ointment was substituted. Itching disappeared, but recurred when the patient stopped treatment. When referred to my office three months later, the patient's itching was severe; examination revealed an egg-shaped area of erythema with slight adherent scaling on the upper inner thighs. Fungous culture on dermatophyte test medium (DTM) grew Trichophyton rubrum. Treatment with clotrimazole (Lotrimin) cream was instituted, and prompt improvement was seen. Three weeks later there was no itching or evidence of inflammation.

Moral: Diagnose first, then treat.

Table 1 lists the common dermatoses of the groin.

Diaper Dermatitis

Almost every infant and incontinent adult suffers at some time from diaper dermatitis. The occlusive nature of the diaper, combined with the more or less prolonged contact with urine and feces, may cause miliaria rubra (prickly heat) or intertrigo. The clinical picture may vary from mild erythema to bright intense erythema spreading beyond the diaper area, and erosions or even ulcerations. Application of a protective paste (A and D ointment, zinc oxide ointment or paste) and frequent diaper changes, including changing the sleeping infant during the night just before the parents retire, may suffice if the dermatitis is mild. If there is no response to this it may be necessary to omit plastic panties (if they are being used), change the diapers as soon as possible after they become wet or soiled, or even omit diapers completely during the night. Candidal or bacterial infection may occur secondarily. The clinical picture of candidiasis and its treatment are described below. Bacterial infection may cause erosions and actual ulcerations and should be treated with topical or systemic antibiotics. Bacterial culture and antibiotic sensitivity studies may be needed to detect the indicated antibiotic. Tetracycline should not be used systemically in women after the fourth month of pregnancy or in children up to eight years of age because of the danger of permanent deformity and discoloration of the teeth.[1]

The time-honored concept that diaper dermatitis is due to ammonia is now being challenged.[2] However, the irritant effect of ammonia may play a secondary role.

The ultimate preventative is depicted in Figure 1, a photograph taken on a recent trip to the People's Republic of China.

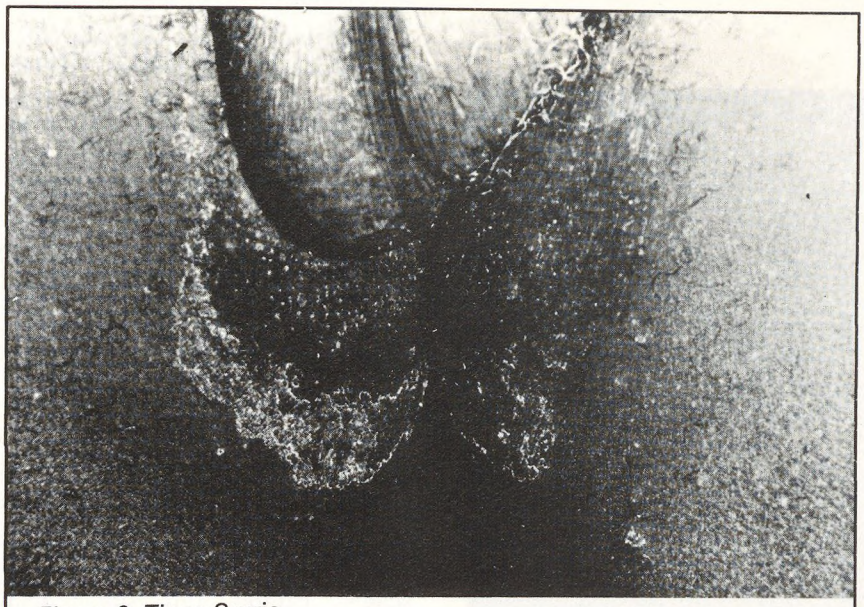

Figure 2. Tinea Cruris

Tinea Cruris

This fungal infection is seen chiefly in adolescent and adult males. For unknown reasons it is rare in the opposite sex. The only woman I recall with tinea cruris was a young Peace Corps volunteer who acquired the infection in hot and humid central Africa. The dermatophytes enjoy warmth and moisture so the groin presents an ideal environment, with apposed skin surfaces raising the temperature and preventing evaporation of sweat. If often lasts for years, although it may be symptomatic only in the summer. Infection may be transmitted to the groin from the feet, with the crumbly friable toenails of onychomycosis a common source. Recurrence after vigorous treatment suggests lack of immunologic resistance against the organism, the mechanism of which is poorly understood. Itching is usually relatively mild or absent, although on occasion it may be severe.

Examination reveals half-moon shaped areas of mild erythema and adherent scaling on the upper inner thighs. There are no vesicles or pustules. The border is often "active," ie, somewhat elevated, sharply marginated, and with a serpiginous configuration (Figure 2). The process may extend posteriorly to involve the medial buttocks and the perianal area. If itching is severe there may also be diffuse, usually mild, lichenification. The wearing of athletic supporters or jockey shorts, vigorous exercise, obesity (which decreases the opportunity for aeration and drying of the intertriginous skin), and sitting for long stretches on occlusive fabrics may be contributing factors. Immunosuppression (therapy with systemic corticosteroids and/or other immunosuppressants for rheumatoid arthritis, systemic lupus erythematosus, and other autoimmune diseases, and for prevention of rejection of a renal transplant) lessens resistance to the dermatophytes (as well as to viruses, bacteria, and candida) and may cause widespread infection that is extremely resistant to treatment.

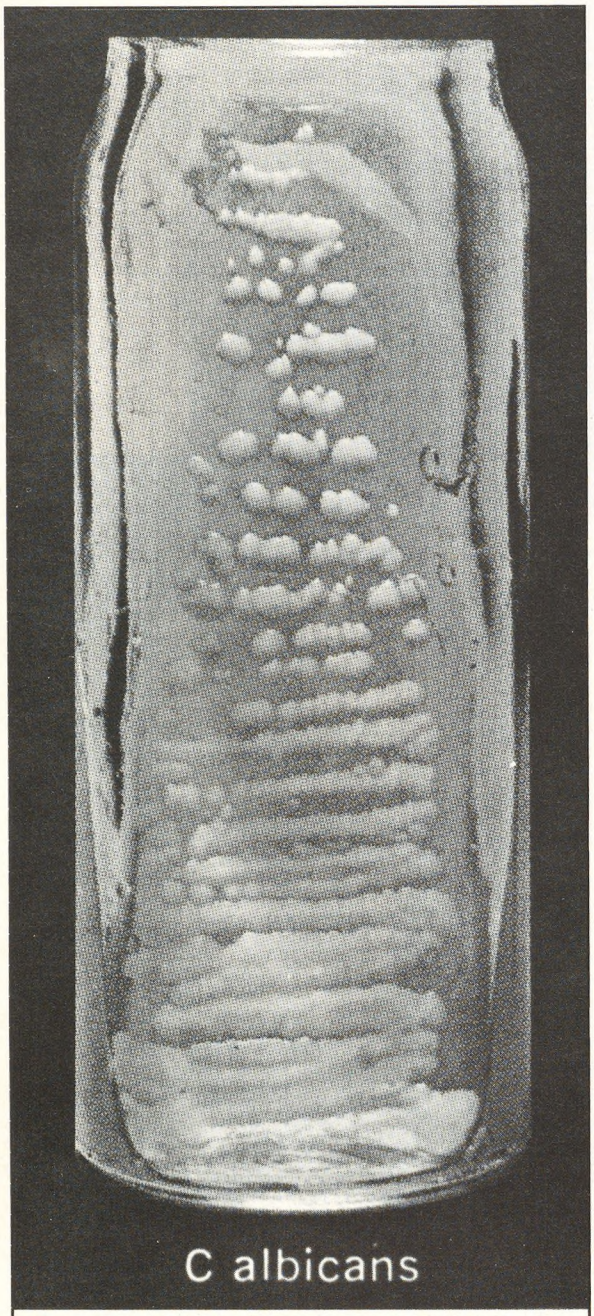

Figure 3. Candida Albicans on DTM Medium. (Courtesy of Clinical Sciences, Inc.)

Diagnosis

1. *Clinical picture* (See above)

2. *Potassium hydroxide (KOH) examination.* Scrape scales from the active border with a dull scalpel, without drawing blood. Place them on a glass slide, apply one drop of 15 percent sodium or potassium hydroxide, cover with a cover slip, and heat *without* boiling for approximately 20 minutes. An incandescent bulb in a gooseneck lamp fills the bill nicely. The preparation is easiest to read if the scales are grouped together rather than scattered on the slide. Gentle pressure (with a ball point pen with the tip retracted, the base of a forceps, or other blunt metal object), after heat and time have softened the keratin, thins the specimen and facilitates examination. Do not break the cover slip. Examine with the 170×objective (lower magnification than high dry) the edges and just beyond the edges of the confluent central mass of scales. Doubly refractile, constant diameter, thread-like hyphae indicate the present of fungi or yeast. The hyphae may be long or short, and may or may not branch. Hairs are much bigger, vary in diameter, and are not doubly refractile. This method will not differentiate between dermatophyte and candida.

3. *Fungus culture*: DTM (Dermatophyte Test Medium) is recommended.* A pathogen turns the yellow medium to red. When a saprophyte grows, the medium stays yellow. The sole exception is that the original yellow color will remain with growth of some strains of C albicans. Candidiasis presents multiple smooth, small, waxy colonies (Figure 3). The various dermatophytes show fluffy or cottony growth (Figure 4). See text on clinical mycology for help in differentiation.[3]

Treatment

Aeration and cooling of the parts is helpful. Aim an air conditioner or electric fan at the unclothed area. Be careful not to get the electric fan too close. Occlusive plastic covers on car seats and Naughahyde furniture upholstery at home and

*DTM medium is available in boxes of 24 from Clinical Sciences, Inc, 30 Troy Road, Whippany, NJ 07981, and from Chester A. Baker Laboratories, Inc, 50 NW 176 Street, Miami, FL 33169.

at the office should be screened from the patients' buttocks by use of a mesh air cushion supported by wires (obtainable at auto supply stores).

Table 2 lists the variety of potent topical fungicides and candidicides now available, all of which are efficacious when applied two or three times a day. Note the trade name Fungizone for amphotericin B (effective only in candidiasis) is confusing. A number of physicians continue to prescribe this for fungous infections because of its name, with, of course, no benefit. Also note that two of the topical drugs are effective against both dermatophytes and candida. At the initial visit, before microscopic confirmation is available, if clinical differentiation cannot be made, it may be wise to initiate treatment with one of these two drugs.

Systemic griseofulvin may be warranted in severe cases. The newer ultra-microsize griseofulvins (Fulvicin P/G, 125 mg and 250 mg tablets, and Gris-PEG 125 mg tablets) provide, milligram for milligram, twice the blood level of the microsize forms. Therefore, only half the dosage is needed. Two hundred fifty milligrams of the ultra-microsize or 500 mg of the microsize variety once a day, immediately after dinner, is usually an efficacious dosage. Some patients absorb and/or metabolize griseofulvin poorly, and may require a higher dose. My pharmacist informs me that there is a moderate savings in using the ultra-microsize instead of using the double dosage of the microsize preparation. Griseofulvin is not only ineffective in the treatment of candidiasis, but may actually stimulate growth of the yeast.

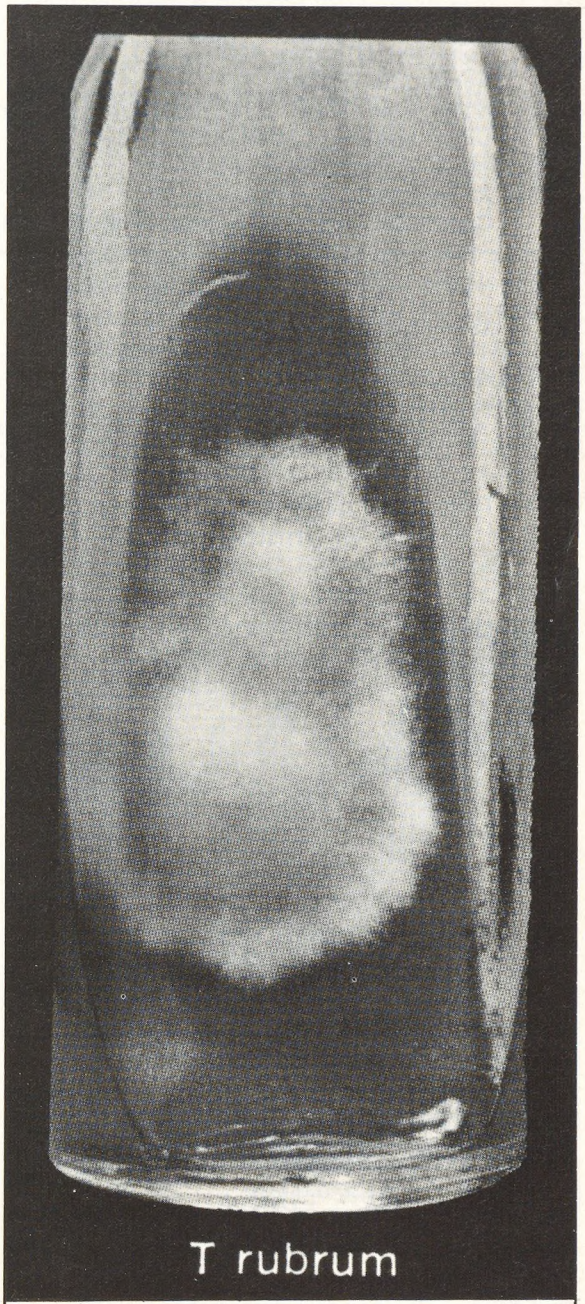

Figure 4. Trichophyton Rubrum on DTM Medium. (Courtesy of Clinical Sciences, Inc.)

Candidiasis

Candidiasis (moniliasis) of the anogenital area (most frequently the groin in men, and the introitus and vagina in women) is caused by infection with Candida albicans. C albicans is a normal inhabitant of the mouth, lungs, gastrointestinal tract, and genitoanal areas in an appreciable percentage of people without clinical evidence of disease. Therefore, culture of C albicans without skin or mucous membrane lesions does not make the diagnosis, just as a positive tuberculin test without clinical or x-ray evidence does not make the diagnosis of clinical tuberculosis. Candida, like the dermatophyte, thrives on warmth and moisture.

Table 2. Effectiveness of Antifungal and Anticandidal Drugs

Topical	Dermatophytes	Candida
Tolnaftate (Tinactin, Aftate)	+	?*
Haloprogin (Halotex)	+	0
Miconazole (MicaTin, Monistat Vaginal Cream)	+	+
Clotrimazole (Lotrimin)	+	+
Nystatin (Mycostatin, Nilstat)	0	+
Amphotericin B (Fungizone)	0	+
Candicidin (Candeptin Vaginal Ointment and Tablets)	0	+
Systemic		
Griseofulvin (many brands)	+	0

+=effective
0=not effective
*Not approved for this indication by the Food and Drug Administration

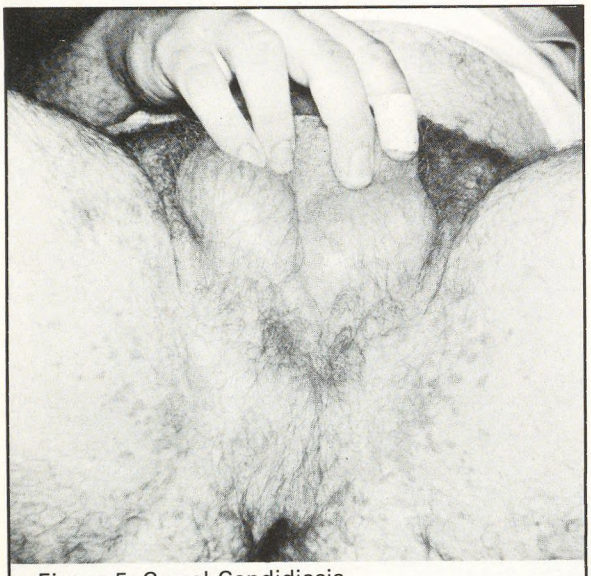

Figure 5. Crural Candidiasis

The factors discussed under tinea cruris, as well as oral contraceptives, pregnancy, diabetes, and broad spectrum antibiotic therapy, predispose to infection. Patients often complain of burning rather than itching. In females one may see diffuse erythema of the vulva and introitus with superficial erosions on occasion, and a curd-like vaginal discharge.

In men, red, discrete, pea size or larger lesions are seen in the femoro-scrotal creases, the upper inner thighs, and not infrequently on the scrotum and penis. Erosions and weeping may occur. Often satellite red macules, flaccid follicular vesicopustules, and small inflammatory papules appear. These are very helpful diagnostically (Figure 5). Frequently in women the inframammary regions are involved, and in both sexes the axillae and intergluteal cleft may be infected. See under tinea cruris for laboratory diagnosis and for treatment.

Lichen Simplex Chronicus

Lichen simplex chronicus (localized neurodermatitis, pruritus scroti) may cause prolonged itching and scratching. When it affects the scrotum, one may see tremendously thickened and lichenified, leathery skin which often attains a frighteningly large size. Lichenification may also be seen on the upper inner thigh without the sharp border usually seen in tinea cruris. Atopic dermatitis may show a similar picture, often with antecubital and popliteal involvement.

Treatment is often a difficult problem. Topical corticosteroids (staring first with 1 percent hydrocortisone cream or ointment) are required. Tar baths (½ oz of Balnetar to tub of tepid water) and, if tolerated, 2 to 5 percent liquor carbonis detergens in a shake lotion, or Tar Doak Lotion may be judiciously prescribed, especially when there is lichenification. The danger of striae from prolonged application of potent topical corticosteroids must be borne in mind, but advanced cases sometimes require heroic measures (see "Striae"). Hydroxyzine (Atarax) by mouth, 10 to 25 mg three times a day, or a similar medication, may be of some value. Superficial psychotherapy may also be helpful.

Contact Dermatitis

Contact dermatitis may be due to allergy or to a primary irritant. In the groin it is usually caused by medications applied for a pre-existing dermatitis. The patient (and sometimes the physician) adds insult to injury by applying a preparation that is irritating or sensitizing. Alcohol and witch hazel are frequently applied by patients "to dry it up," and constitute primary irritants in this area. Almost every topical medication may sensitize. The over-the-counter "caine" topicals contain benzocaine, a potent sensitizer, and can be dangerous when applied to any part of the body.

Mycolog cream is another bad actor, and is therefore not included in Table 2. Ethylenediamine hydrochloride, incorporated as a stabilizer in the cream (but not in the ointment), is one of the ten most common sensitizers in this country and can cause severe eczematous and urticarial reactions. Since all injectable forms of theophylline contain ethylenediamine hydrochloride, asthmatic patients can develop severe reactions to theophylline if they have been sensitized by Mycolog cream. Such patients should also avoid the antihistamine tablets, Pyribenzamine, Histadyl, Atarax, and Vistaril, as well as the nose and eye solutions Prefrin, Privine, and Vasocon-A. The parabens,[4] present only in the cream, and neomycin, present in both ointment and cream, may cause allergic contact dermatitis. Mycolog contains no agent effective against dermatophyte infections. *Physicians' Desk Reference 1978* states, "based on a review (of Mycolog). . . by the National Academy of Sciences-National Research Council and/or other information, FDA has classified the indications as follows: possibly effective in cutaneous candidiasis. . . ." Mycolog cream has been eliminated from use in France, the University of Miami, and the Skin and Cancer Unit of University Hospital in New York because of its sensitizing potential. Many dermatologists, including Dr. Alexander A. Fisher of New York, have stressed that its benefit-risk ratio is so poor that the Food and Drug Administration should exclude it from the pharmacist's shelves.

Pain, burning, and itching may be severe in contact dermatitis. Clinically, one sees erythema and maceration if intertriginous, scale if not. The lesion conforms to the area to which the medication was applied and to where it has spread. If severe, however, the process may spread beyond the local area and even become generalized. If contact dermatitis is suspected, *stop all previous topical medication* and treat initially with bland aluminum acetate cool compresses, (Domeboro powders, Bluboro powders). For a generalized severe dermatitis, corticosteroids (topical or even a short systemic course) may be needed. Figure 6 demonstrates an allergic contact dermatitis to ammoniated mercury.

Intertrigo

This superficial dermatitis may occur as a result of close apposition of skin surfaces. In addition to the groin, lesions may be seen in the axillae, between the toes, in the intergluteal cleft, beneath pendulous breasts, as well as in the diaper area and on the neck of chubby infants. Heat, moisture, and chafing combine to cause maceration and irritation. Bacterial, fungal, and yeast infections may occur secondarily. The skin is diffusely red and macerated, and denudation and erosion may occur.

The aim of treatment is to relieve the mechanical conditions which favor maceration and chafing and includes: thorough cleansing and drying of the areas twice daily (soap must be rinsed off thoroughly); liberal use of talcum powder (cornstarch provides nutriment for microorganisms and should not be used); use of boxer shorts rather than jockey shorts for men; weight reduction for obese patients; a cool environment (electric fan or air

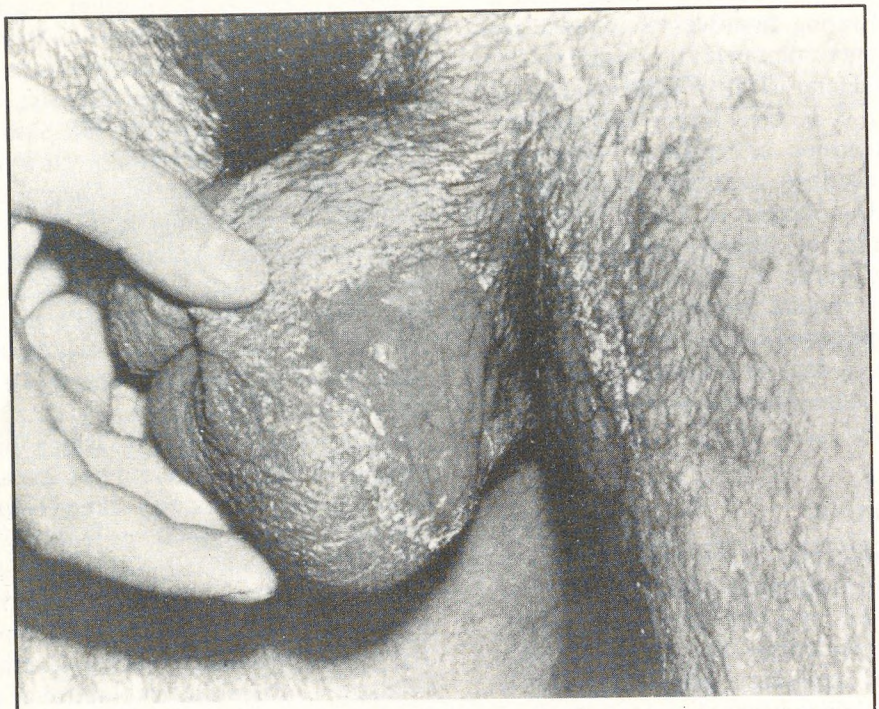

Figure 6. Allergic Contact Dermatitis Due to Application of Ammoniated Mercury

conditioner directed to the involved areas); bland wet compresses; Castellani paint; and a drying shake lotion, such as:

Zinc oxide
Talc
Glycerine *aa 18*
70% isopropyl alcohol *60*
Aqua q s ad *180*
Sig: Shake well. Apply locally three times a day

Psoriasis

Psoriasis commonly involves the anogenital region. Intertriginous psoriasis bears little resemblance to lesions on the glabrous skin. The dry, micaceous, silvery scaling is not seen and is replaced by beefy red, nonscaly, sharply outlined smooth flat plaques similar in appearance to lesions of moniliasis. Finding lesions of psoriasis elsewhere, as on the scalp, ears, elbows, knees, or fingernails, helps in diagnosis. Application of a corticosteroid cream twice daily usually brings about prompt improvement in intertriginous areas.

Seborrheic dermatitis

A common disease of unknown etiology, seborrheic dermatitis, may affect the infant as well as patients of all ages. The usual location is the scalp (cradle cap in the infant, "dandruff" in others). The scalp scale tends to be diffuse, in contrast to the spotty localization of psoriasis. The eyebrows, central forehead, nasolabial folds, retroauricular areas, and presternum and interscapular areas are frequently affected. Intertriginous folds, axillae, the area under the breasts in women, the umbilicus, the anogenital region, and the gluteal cleft may also be involved. In the groin there is moderate erythema with brownish scaling.

Again, topical corticosteroids with due regard to the side effects mentioned below may be em-

ployed. A cautious trial of Pragmatar may bring beneficial results, but may cause irritation of this sensitive intertriginous skin. Another time-tested agent, less likely to irritate than Pragmatar, is 40 percent sulfur precipitate in hydrophilic ointment USP (United States Pharmacopeia). One would think this high percentage of sulfur would be irritating, but in actuality it usually is not.

Bacterial and candida infection may occur secondarily.

Pediculosis Pubis

Pediculosis pubis may occur in the groin although the most common location is in the pubic hair. The axillae, trunk hair, eyelashes, and eyebrows may also be infested. The female louse, 1 to 2 mm in length, camouflages herself beautifully as immobile scale at the base of a hair. Only when disturbed by being poked with an applicator stick does her motion reveal her identity. However, a much quicker and easier method of diagnosing pediculosis pubis is through the finding of nits (eggs). These far outnumber the lice. They are 0.5 to 1.0 mm in length, firmly cemented to the hairs usually 2 to 8 mm above the surface of the skin. The nit cannot be slid up or down the hair with the fingers. It is smoothly globular and lies at an angle to the long axis of the hair. An optical loupe, a hand lens, or the low power of the microscope will assist in making the diagnosis. Since the egg is laid at the base of the hair, its distance from the skin is a measure of the duration of infection. Taches bleuâtres, steel gray or bluish macules due to an enzyme deposited in the corium by the louse, may be seen. Despite the severe itching, the skin usually shows a few excoriations at the most.

After examination to determine whether the pubic louse has spread beyond the pubic area (see above), all infested areas except the eyelashes should be thoroughly anointed on a single occasion by 1 percent gamma benzene hexachloride (Kwell cream or lotion). Twenty-four hours later, a hot soapy bath should be taken and underclothes and nightclothes laundered. The physician who is concerned about the toxicity of this drug may apply in its place 10 percent sulfur precipitate in hydrophilic ointment USP. The dead nits will remain as a reminder of the infestation for weeks or months, until the hairs to which they are attached fall. To remove these, make a vinegar poultice and apply it to the involved areas for three quarters of an hour. The acetic acid in the vinegar dissolves the chitin holding the nits to the hairs; they may then be removed with a fine comb. Should the eyelids be infested, the pediculi are killed by application at night of a generous amount of petrolatum (yellow or white Vaseline).

It is of course important to treat the sexual contact or contacts at the same time that the patient is treated.

Striae

Topical application of potent steroids may cause the development of permanent striae. This occurs most often in the groin but also in the axillae, and occasionally on the glabrous skin as well, especially when treatment is prolonged and when occlusion is employed. Some years ago I treated a man for mild neurodermatitis of the groin with a fluorinated steroid ointment topically. About a year later he returned stating, "I'm still using the same ointment, and I still have the rash; but it doesn't itch any more." Examination revealed multiple red striae on the upper inner thighs. His neurodermatitis was gone, but his friendly neighborhood pharmacist had disregarded my "non rep" on the prescription, and the result was permanent striae. I learned from this to prescribe 1 percent hydrocortisone cream or ointment initially and to resort to more potent steroids only when necessary.

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